CLAIMS

1. A three-dimensional survey system, comprising:

a survey apparatus for measuring a position of a collimation target from distance and angle;

an image acquisition devices each for acquiring images of an object to be measured, inclusive of an image of the collimation target, from different plural directions; and

arithmetic processing means that matches, by using the collimation target as a tie point, the images that have been acquired by said image acquisition devices, relates the collimation target position that has been measured by said survey apparatus, and the collimation target in each of the matched images, and computes three-dimensional coordinate data of the object to be measured, in accordance with the related target data.

2. The three-dimensional survey system according to claim 1, wherein:

said survey apparatus placed at a known point measures positions of at least six collimation targets; and

said arithmetic processing means performs corrections for inclinations or rotational angle errors of said image acquisition devices, calculates positions thereof from not only the position of the collimation target, but also the images acquired from said image

acquisition devices, and computes three-dimensional coordinate data of the object to be measured, the coordinate data having been acquired by said image acquisition devices.

3. The three-dimensional survey system according to claim 1, wherein:

each of the collimation targets is formed of a retroreflective material, and on the surface thereof is formed a mark that facilitates collimation.

4. The three-dimensional survey system according to claim 3, wherein:

said mark includes a marker section identifiable from image data of said image acquisition devices, and a symbol that an operator can identify.

5. The three-dimensional survey system according to claim 3, wherein:

said mark includes the cross hairs that facilitate collimation, a visually identifiable character, and an electrically readable code.

6. The three-dimensional survey system according to claim 5, wherein;

said visually identifiable character is a numeral and the electrically readable code is a bar code.

7. A three-dimensional survey method, comprising:

a first step of measuring a position of a

collimation target from distance data and angle data by means of a survey apparatus;

a second step of acquiring images, inclusive of an image of the collimation target, from different directions by using a plurality of image acquisition devices;

a third step of matching, by using the collimation target as a tie point, the images acquired by the image acquisition devices;

a fourth step of relating the collimation target position measured by the survey apparatus in said first step, and the collimation target in each of the matched images; and

a fifth step of computing three-dimensional coordinate data on the object to be measured, in accordance with the data related in said fourth step.

8. A three-dimensional survey system, comprising:

a survey apparatus for measuring a position of a collimation target from distance and angle and acquiring images inclusive of an image of the collimation target;

an image acquisition devices each for acquiring images of an object to be measured, inclusive of an image of the collimation target, from different plural directions; and

arithmetic processing means that matches the images that have been acquired by said survey apparatus, and the

images that have been acquired by said image acquisition devices, further matches, by using the collimation target as a tie point, the images acquired by said image acquisition devices, relates the collimation target position that has been measured by said survey apparatus, and the collimation target in each of the matched images, and computes three-dimensional coordinate data of the object to be measured, in accordance with the related target data.

9. An electronic storage medium formed as an FD, CD, DVD, RAM, ROM, memory card, or the like, said storage medium having a program stored therein to lay down procedural steps of:

reading both distance data and angle data of the collimation target measured by a survey apparatus;

reading image data inclusive of the collimation target photographed from different directions by a plurality of image acquisition devices;

matching the images acquired by the survey apparatus, and the images acquired by the image acquisition devices;

further matching, by use of the collimation target as a tie point, the images acquired by the image acquisition devices;

relating the collimation target position measured by the survey apparatus, and the collimation target in each of

the matched images; and

computing three-dimensional coordinate data of the object to be measured, in accordance with the related target data.